THE PREPARATIONS FOR AND THE IMPLICATIONS OF THE GENERAL WORLD ADMINISTRATIVE RADIO CONFERENCE OF 1979

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THESIS

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AND THE IMPLICATIONS OF
THE GENERAL WORLD ADMINISTRATIVE
RADIO CONFERENCE OF 1979

by

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In 1979 the International Telecommunication Union (ITU), one of the oldest and most specialized agencies of the United Nations, will convene an Administrative Conference to review and revise, as necessary, the Radio Regulations in their entirety. This is the first time since 1959 that a GWARC will have been empowered to treat the Radio Regulations as a whole. With the world's radio telecommunications expanding by quantum leaps, the competition for frequency allocations can be expected to be

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This thesis proposes to outline the trends seen arising from the last few WARCS in an effort to predict what problems the United States is apt to face in 1979. It also outlines the preparations presently under way within the United States for this conference and presents recommendations toward the direction it feels these preparations must go for a favorable outcome in the 1979 negotiations.

The Preparations For And The Implications of The General World Administrative Radio Conference of 1979

by

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requirements for the degree of

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September 1975

ABSTRACT

In 1979 the International Telecommunication Union (ITU), one of the oldest and most specialized agencies of the United Nations, will convene an Administrative Conference to review and revise, as necessary, the Radio Regulations in their entirety. This is the first time since 1959 that a GWARC will have been empowered to treat the Radio Regulations as a whole. With the world's radio telecommunications expanding by quantum leaps, the competition for frequency allocations can be expected to be fierce. To make matters worse, ITU, like the United Nations, is a "one nation, one vote" forum. Many countries, mostly the lesser developed ones of the Third Bloc, have started using their votes for political gains during the last few conferences.

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LIST OF ABBREVIATIONS

CCIR	International Radio Consultative Committee
CCITT	International Telegraph and Telephone Consultative Committee
CEPT	Council for European Post and Telecommunications
DOD	Department of Defense
FCC	Federal Communications Commission
GHZ	Gigahertz
GWARC	General World Administrative Radio Conference
IFL	International Frequency List
IFRB	International Frequency Registration Board
IRAC	Interdepartment Radio Advisory Council
ITU	International Telecommunication Union
KHZ	Kilohertz
OTP	Office of Telecommunications Policy
MHZ	Megahertz

I. THE FREQUENCY MANAGEMENT PROBLEM

Unlike our other rapidly diminishing resources, the radio frequency spectrum can neither be exhausted nor worn out. So far, it is free to any user in the United States who has a legitimate need for it and who is willing to operate within government regulatory constraints. In spite of these facts, the radio frequency spectrum is the least understood and most abused of all of our natural resources. It is a natural phenomenon that plays a vital part in all of our lives, yet its value and the importance of its prudent management are not understood by the preponderance of those who use it.

The very fact that this resource is inexhaustible and free to all users poses problems. Although it cannot be worn out, careless or inefficient use can contaminate it and prevent us from obtaining its maximum utilization.

The radio spectrum is not limitless. From a scientist's point of view the electromagnetic spectrum extends over a wide range of frequencies from a few tenths of a cycle per second up through those associated with cosmic rays far beyond the range of visible light, on up beyond one million million million kilohertz. [Ref. 27] To the engineer, however, the radio spectrum is that part of the electromagnetic spectrum below three thousand million kilohertz (KHZ). Of

this range, we have allocated and are using about one and one-third percent, with some experimentation being done with as much as ten percent, which includes experiments with lasers in the vicinity of visible light. The upper ninety percent of the radio spectrum is severely hampered in its practical use by absorption of radio energy by water vapor in the atmosphere. [Ref. 27] There is some hope that laser technology might open up much higher frequencies, providing vast communications capabilities. For practical purposes, however, present knowledge indicates that laser systems may be economical over only short distances containing high density traffic loads. Even then, serious atmospheric limitations will confine their uses.

The spectrum is not elastic. Frequencies cannot be divided into smaller numbers without limit. Each radio operation requires a finite part of the spectrum, a channel in time and space; otherwise, there is interference.

The spectrum is not flexible. Certain tasks can be performed only by using certain frequencies. All parts of the spectrum cannot be substituted for all other parts for every use because of propagation, atmospheric, and bandwidth characteristics.

The spectrum acknowledges no boundaries. All nations have free access to it. Therefore, its use by any one nation impacts upon the rest of the world. For optimum benefit there must be international agreement on its use and future development, or ultimately chaos will develop.

Within these finite constraints, the radio frequency spectrum resource plays a vital and omnipresent role in all of our lives where communications and electronics are involved. Over ninety billion dollars have been invested in the United States alone for spectrum dependent electronics equipment. About fifty-five percent of this represents the Federal Government's investment. [Ref. 10]

It has been stated that telecommunications as an economic force has become one of the most substantial segments of the industrial complex in the world. The size and scope of capital outlay needed to bring the proper tools to an expanding society are enormous. With a world-wide investment in capital assets already exceeding two hundred billion dollars, it has been estimated that the next decade will see a four-fold increase in capital demands.

II. INTERNATIONAL REGULATION OF THE FREQUENCY SPECTRUM

Since the radio frequency spectrum is oblivious to national boundaries, it is imperative that nations establish a common base to avoid havoc in their telecommunications. Such a base is found in the International Telecommunication Union (ITU). Founded in 1932, the ITU, the oldest of the specialized agencies of the United Nations, was created as a result of the invention of the telegraph.

The Berlin Conference of 1906, which was attended mainly by the Maritime Powers, drew up a Radiotelegraph Convention to which a body of Regulations was attached to ensure safety of shipping. It was this conference which made intercommunications between ships and between ships and coast stations obligatory. It also decided upon the adoption of the SOS signal and the obligation to respond to it.

The Radiotelegraph Convention and Regulations were revised by three subsequent conferences. Each of these expanded the scope and powers of the Regulations somewhat. The first conference was convened in London in 1912, just two months after the Titanic disaster, to regulate, in detail, the dispatch of distress signals and to make it compulsory for ships to carry radio equipment and have a radio operator on watch at all times. The second conference met in Washington in 1927 and undertook, for the first time, the allocation of specific frequency bands for the various services in order to prevent interference.

During this somewhat confused period of twenty-six years, the Telegraph Bureau at Berne had to serve as administrative headquarters for both the Telegraph Union and the Radio Telegraph Conference. Finally, it was recognized that telecommunications, of necessity, must be dealt with as a whole; not piecemeal.

The major step was taken when the third conference, held in Madrid, decided to extend the duties of the Telegraph Union to include those of Radiotelegraph Conferences. This union thus became the International Telecommunication Union. It has since grown from its original seventy-eight member countries in 1932 to its present one hundred forty-nine members, ninety of which regularly attend meetings of its General Secretariat and other administrative bodies located in Geneva, Switzerland. Each country, regardless of its size, population, social structure, resources, investment in,or dependence upon,the radio spectrum, has only one vote.

The purpose of the ITU is to facilitate improved efficiency and understanding to the worldwide use of telecommunications. The ITU exists to:

1) Maintain and extend international cooperation for telecommunications of all kinds
2) Promote the development of technical facilities with a view toward improving the efficiency of telecommunications services, and, insofar as possible, making them available to the public, and

3) Harmonize the actions of nations in the attainment of these common ends. [Ref. 27]

The ITU, through its organization, constructs, coordinates, promotes, and regulates internationally the use and the users of the radio spectrum through a very complex structure. (See Figure 1) This structure is a result of its long history and development. As telecommunications has grown, so has the ITU with each new layer of the structure added to meet new demands.

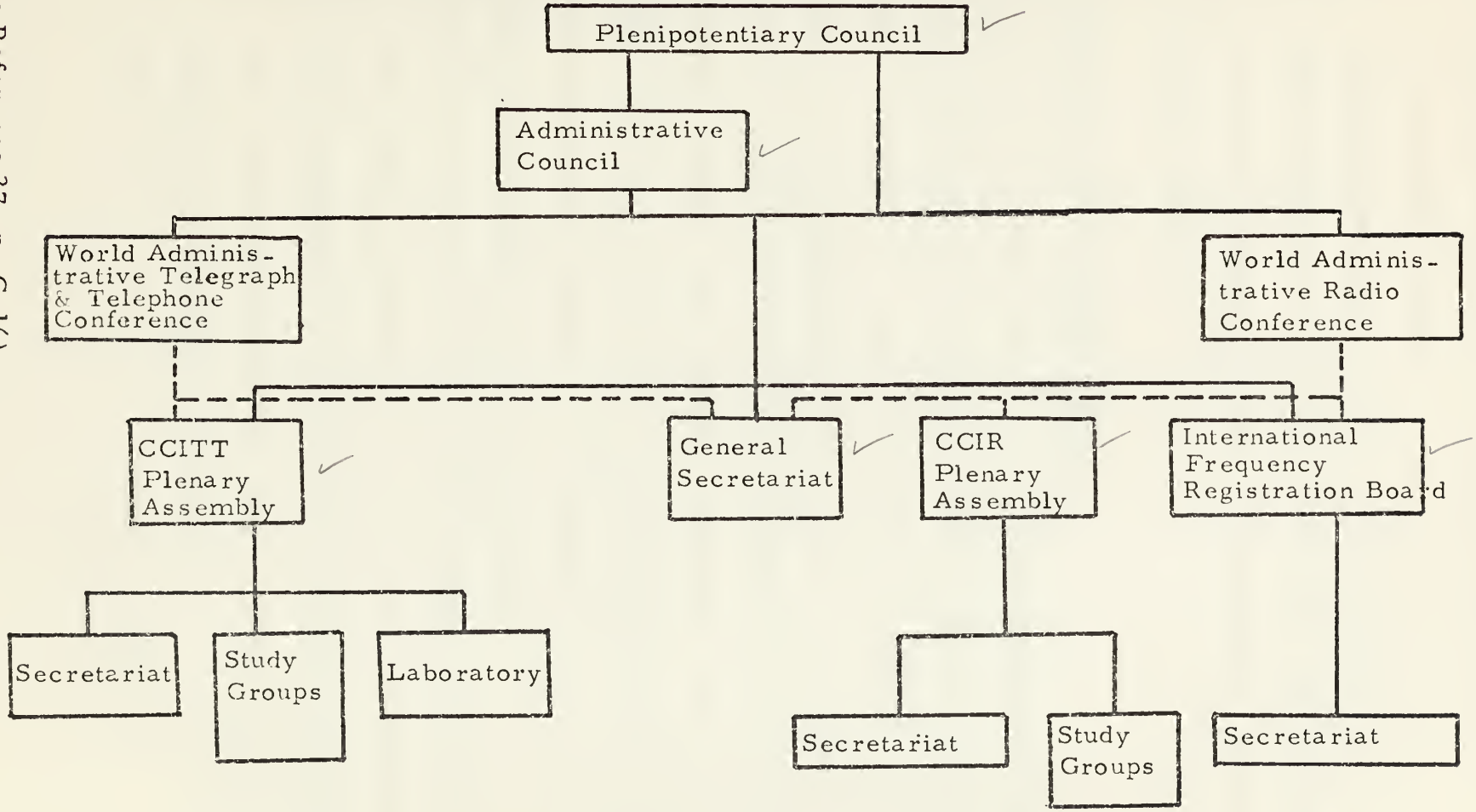
A. PLENIPOTENTIARY CONFERENCE

Essentially, the ITU is composed of six bodies. First, the Plenipotentiary Conference, which is the supreme organ of the ITU, deals with basic institutional, financial, and organizational issues. It normally meets every five to seven years to determine the general structure and policies of the ITU and to revise agreements between the ITU and other organizations as necessary. Within the United States, proposals on international policy are submitted to the Secretary General of the ITU, through the Department of State, some six or eight months in advance of a Plenipotentiary Conference.

The following may participate in Plenipotentiary Conferences:

1) Delegates from members and associate members of the ITU,

INTERNATIONAL TELECOMMUNICATION UNION ORGANIZATION



(From Reference 27, p. C-16) Figure 1

2) The Telecommunications Operating Services of the ITU, in a consultative capacity,

3) Any permanent organ of the ITU, in an advisory capacity,

4) Observers from non-member governments, upon invitation by a member government with the agreement of the Administrative Council. [Ref. 3]

B. ADMINISTRATIVE CONFERENCES

Second, Administrative Conferences develop international regulations and recommendations governing the use of telecommunications. They generally meet at the same time and place as the Plenipotentiary Conferences and are responsible for the revision of the Regulations or for any other directive the Plenipotentiary Conference may assign it.

An "Extraordinary" Administrative Conference is one that meets other than every five or seven years with the Plenipotentiary Conference. It may be convened by a decision of a Plenipotentiary Conference, which also determines the agenda and the time and place.

The following may participate in Administrative Conferences:

1) Delegations of members or associate members of the ITU,

2) Representatives of recognized private operating agencies,

3) The Telecommunications Operating Services of the United Nations in a consultative capacity, and

4) Observers of international organizations. [Ref. 3]

C. ADMINISTRATIVE COUNCIL

Third, the Administrative Council is the governing body. It is now made up of thirty-six members elected by the Plenipotentiary Conference with due regard for equitable representation and charged with representing the Plenipotentiary Conference between its meetings. Members hold office for five years and are eligible for re-election. Each member has one vote only here also.

The Council normally meets annually and is chaired by a different country each year. It has served to alleviate the need for more frequent Plenipotentiary meetings.

D. GENERAL SECRETARIAT

Fourth, the General Secretariat is composed of a Secretary General, two Assistant Secretaries General, and such staff as they may require to carry out their duties.

The Secretary General is the Chief Administrative Officer of the ITU and is appointed by the Administrative Council for an indefinite period. He is responsible for carrying on the secretarial work in preparation for, and following, all of the conferences and meetings of the ITU, including those of its permanent organs. He prepares the annual budget and financial operating report for audit and approval by the Administrative Council before their submission to the next Plenipotentiary Conference.

Finally, the Secretary General is authorized to appoint the staff members of the ITU, namely the staffs belonging to the International Frequency Registration Board (IFRB), the International Radio Consultative Committee (CCIR), and the International Telegraph and Telephone Consultative Committee (CCITT). These specialized secretariats, as they are called, are under the supervision of the Secretary General for administrative purposes only, and work directly under the orders of the directors of the organs concerned.

E. INTERNATIONAL FREQUENCY REGISTRATION BOARD (IFRB)

Fifth, the International Frequency Registration Board (IFRB) furthers the use of the radio spectrum by recording radio frequency assignments made by all the participating countries, in accordance with the procedure provided for in the Radio Regulations. This essential record, the International Frequency List (IFL), includes the date, purpose, and technical characteristics of each of these assignments to ensure that they receive formal international recognition. It also advises on the operation of the maximum practicable number of radio channels in those parts of the spectrum where harmful interference may occur.

F. INTERNATIONAL RADIO CONSULTATIVE COMMITTEE (CCIR) AND INTERNATIONAL TELEGRAPH AND TELEPHONE CONSULTATIVE COMMITTEE (CCITT)

Sixth, the International Radio Consultative Committee (CCIR) and the International Telegraph and Telephone Consultative Committee

(CCIT) produce reports and recommendations especially for Administrative Councils. Their roles are to study technical and operating questions and issues. Membership is made up of the Administrations of members of ITU and those private operating communications agencies that are approved by the respective Administrations.

Each International Consultative Committee works through the medium of its Plenary Assembly which meets approximately every three years, and through its study groups which the Assembly sets up to deal with specific questions and issues. Normally a Plenary Assembly will meet, if possible, at least eight months prior to a World Administrative Conference to ensure that its recommendations are as up-to-date as possible.

The questions studied by each International Consultative Committee, on which it will issue recommendations, can be referred to it by a Plenipotentiary Conference, an Administrative Conference, the Administrative Council, the other Consultative Committee, or the IFRB. In addition, its own Plenary Assembly can select issues for study, or, in the interim between Plenary Assemblies, twenty members of the ITU together can request a study by correspondence. Each Consultative Committee may also study and offer advice concerning the telecommunications problems of any individual country upon the request of that country.

Most of the technical work of the ITU is done through its Consultative Committees, which have advisory capacities only and no authority for executive action. However, the steady flow of recommendations from these committees is generally ratified at the periodic Plenary Assemblies of the ITU. These recommendations have been characterized by their thoroughness and by the great breadth and depth of their supporting studies.

The point has been made repeatedly in international circles that trust in our institutions is paramount for future success in international negotiations. It has become increasingly clear during the last few conferences that these Consultative Committees are two of the few organizations still widely respected by the international community. As a result, their reputations for integrity give them a crucial role to play in international telecommunications in the near future.

III. NATIONAL REGULATION OF THE FREQUENCY SPECTRUM

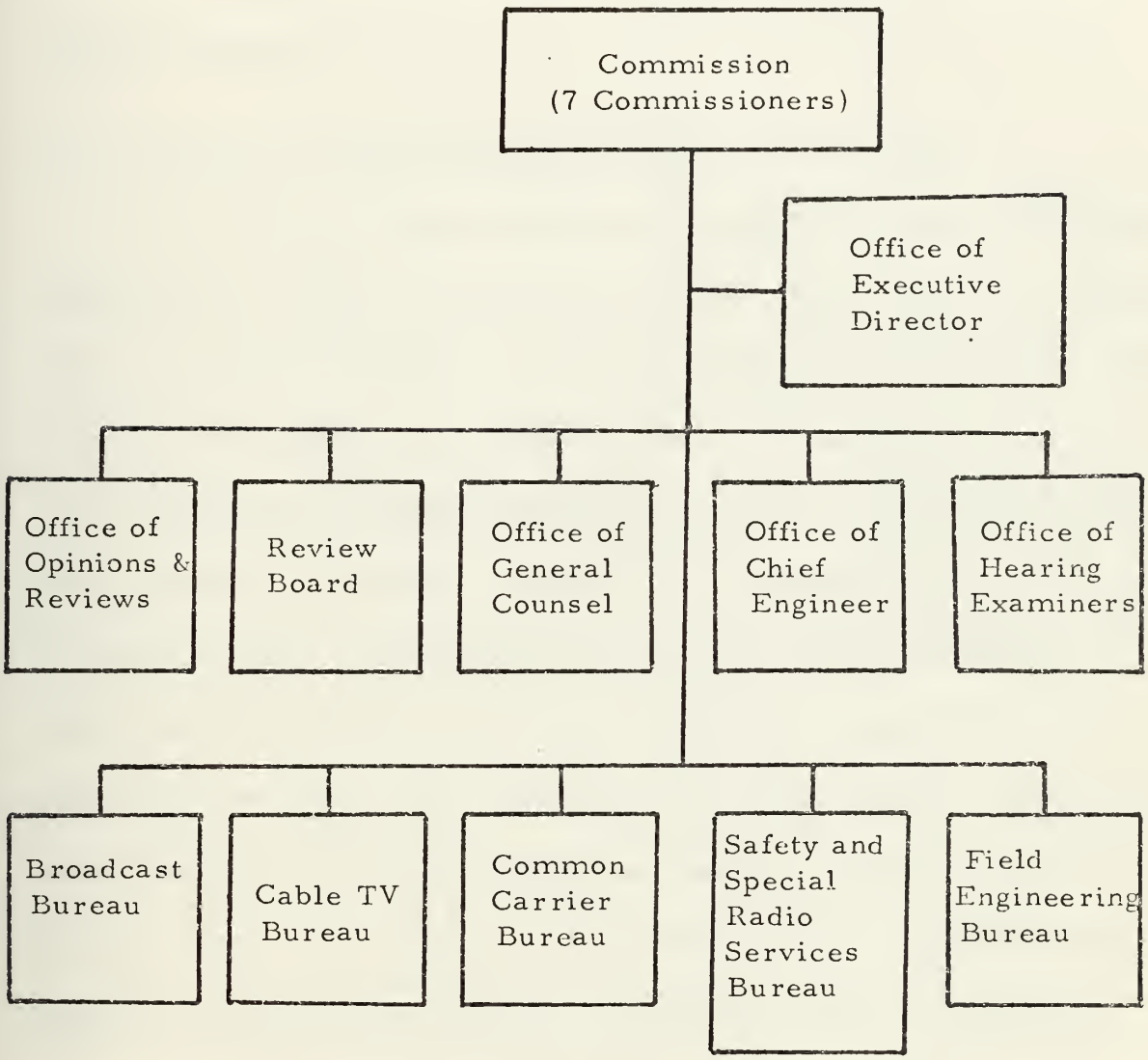
The management and allocation of the frequency spectrum within this country is the responsibility of the Federal Communications Commission (FCC) and the President of the United States. Under the Communications Act of 1934, as amended, responsibility for regulating Non-Federal Government interstate and foreign telecommunications is vested in the FCC. This act specifically exempts radio stations belonging to, and operated by, the United States Government and provides that these stations shall be regulated by the President.

With the advent of space communications, it became necessary to provide for regulating commercial communications satellite systems. Under the Communications Satellite Act of 1962, the regulatory authority of the United States' part of these international systems is vested in the FCC. This act also assigns responsibility to the President to help attain coordination and efficient use of the spectrum, both domestically and overseas.

A. FEDERAL COMMUNICATIONS COMMISSION (FCC)

The FCC was established in 1934 as an independent government agency with direct responsibility to Congress. It is headed by seven commissioners, appointed by the President, and confirmed by the Senate, for seven-year terms. One commissioner is designated by the President

FEDERAL COMMUNICATIONS COMMISSION



(From Reference 10, p. 15)

Figure 2

to serve as Chairman. The FCC is divided into five Bureaus, each responsible for a specific segment of its function. (See Figure 2)

Of special interest to this thesis is the Office of Chief Engineer whose Frequency Allocation and Treaty Division is designated as the FCC liaison representative with the Government-side of the house on spectrum matters.

B. OFFICE OF TELECOMMUNICATIONS POLICY (OTP)

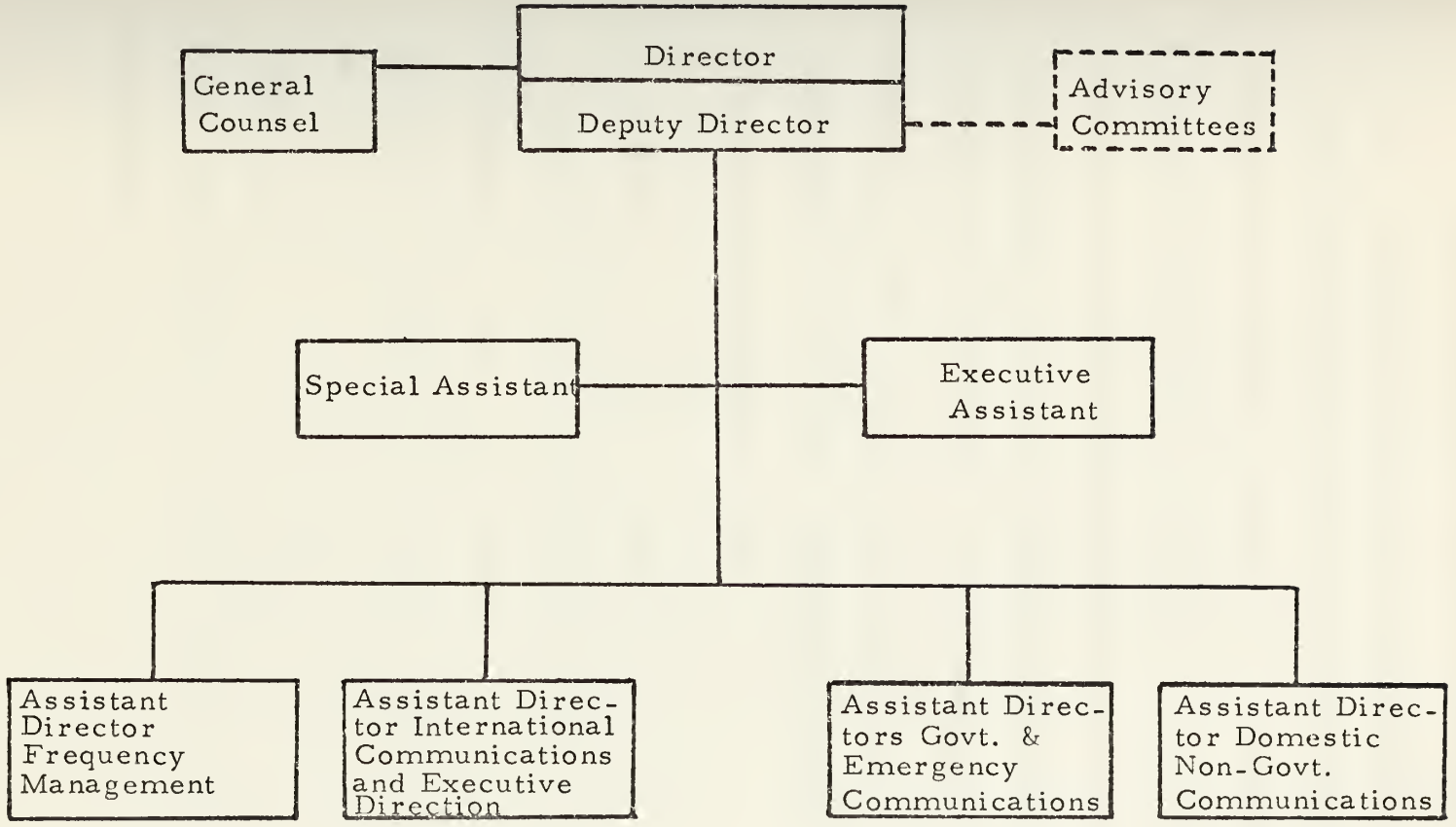
To carry out his telecommunications responsibilities, the President established the Office of Telecommunications Policy (OTP) in 1970 from what was formerly the Office of Telecommunications Management. The creation of this office was a giant step in the formulation of an overall telecommunications policy development structure for the United States. The need for such an office had long been recognized and, as far back as the late 1940's, recommendations had been made to establish an office similar to OTP. Each President since that time had directed that studies be made of the communications field, and each study had concluded that an entity be established within the executive branch to perform many of the same type of functions that OTP now performs. However, the government viewed telecommunications as a mission support function and did not focus on the need for public policy. Thus, the policy that existed was developed in response to specific issues on an ad hoc, patchwork basis rather than being developed on a systematic and sophisticated basis attuned to the needs of the nation.

As did previous Presidents, President Johnson also recognized the deficiencies in the telecommunications policy area and in 1967 commissioned a task force on communications policy, headed by Eugene V. Rostow. He instructed this group to "make a comprehensive study of communications policy". [Ref. 23]

The Rostow Report concluded that "The overall need ... is for a long-range planning policy ... formulating and coordinating, and mission support capability which can serve to integrate the various roles in which the Executive Branch is presently engaged." [Ref. 23]

In 1970, President Nixon followed this up by submitting his reorganization Plan No. 1 to Congress. Approval of this plan followed by Executive Order No. 11556 created what is now called OTP. This issuance of an Executive Order redelegated the President's responsibilities for spectrum management to the Director of OTP. Included were the following spectrum-related functions:

1) To serve as the President's principal advisor on telecommunications;
2) To develop U.S. positions for international conferences;
3) To develop policies and practices for Federal Government use of the spectrum;
4) To develop, in cooperation with the FCC, long-range planning for better spectrum use;



OFFICE OF TELECOMMUNICATIONS POLICY

(From Ref. 27, p. C-5)

Figure 3

5) To amend, modify, and revoke frequency assignments for Federal Government stations; and finally

6) To authorize foreign government radio stations. [Ref. 10]

Within OTP, the Assistant Director for Frequency Management is responsible for frequency management of the Federal Government sector of the spectrum. (See Figure 3) OTP receives support from the Office of Telecommunications (OT), Interdepartment Radio Advisory Council (IRAC), Frequency Management Advisory Council (FMAC), and the Electromagnetic Radiation Management Advisory Council (ERMAC). Of these specialized organizations, only two are of immediate concern to this thesis, OT and IRAC, although the rest play a somewhat minor role in the preparations for 1979.

C. OFFICE OF TELECOMMUNICATIONS (OT)

Pursuant to the same Executive Order that created OTP, the Office of Telecommunications was established in 1970 by the Secretary of Commerce. Its purpose is to provide analysis, engineering, and technical services to the Director of OTP, including support to his responsibilities for frequency management. Currently, OT has about forty people involved in frequency support to OTP, including the IRAC Secretariat.

D. INTERDEPARTMENT RADIO ADVISORY COMMITTEE (IRAC)

IRAC was established in June 1922 to find a means for making the most effective use of radio by the government. In earlier years, IRAC reported directly to the President. Now, however, it reports to OTP's Deputy Assistant Director for Frequency Management, who is also its Chairman. The man presently filling this double-hatted billet is Mr. Ed Probst, formerly from Defense Communications Agency (DCA).

IRAC is currently composed of representatives from seventeen governmental departments or agencies with liaison between it and the FCC effected by a representative appointed by the FCC to serve in this capacity. IRAC's functions are to assist the Director of OTP in assigning frequencies to the United States Government radio stations and to develop and execute policies, programs, procedures, and technical criteria pertaining to the use of the frequency spectrum. Various subcommittees, including groups assigned to planning, frequency assignment, technical, plus ad hoc or other similar support groups, provide IRAC with the necessary reinforcement needed to exercise its responsibilities under the OTP structure. Naturally, this support culminates in the ITU arena.

E. DEPARTMENT OF STATE'S CCIR COMMITTEE/STUDY GROUPS

The Secretary of State is the Chief Advisor to the President on all matters concerning the foreign policy of the United States, including any

dealings or negotiations in the international arena over telecommunications policies or positions. To carry out this responsibility, the Secretary of State relies heavily upon the Director of OTP and the FCC for assistance and advisement.

The United States organization for work in the CCIR is comprised of a National Committee and Study Groups. The National Committee is the executive body and coordinator of the United States' technical contributions and positions for the international CCIR. The United States Study Groups are structured the same as the international groups. The National Committee and the Study Groups are government-industry groups and are duly chartered pursuant to the Federal Advisory Committee Act (Public Law 92-463). The United States Executive Committee for ITU'S CCIR Plenary Assembly presently consists of fifty-five members from the Federal Government and industry. Its Chairman is Mr. Gordon L. Huffcutt from the Office of Telecommunications, Department of State. The United States CCIR presently has eleven Study Groups engaged in work in the following areas:

1) Spectrum Utilization - Monitoring

2) Space Research and Radioastronomy

3) Fixed Service at Frequencies Below about 30 MHZ

4) Fixed Service Using Satellites

5) Propagation in Non-Ionized Media

6) Ionospheric Propagation

7) Standard-Frequency and Time-Signal Services

8) Mobile Services

9) Fixed Service Using Radio-Relay Systems

10) Broadcasting Service (Sound)

11) Broadcasting Service (Television) [Ref. 17]

The CCIR does not engage in coordination of frequency requirements, per se. Rather, it acts as a technical standards body for frequency management. In other words, the CCIR recommends technical sharing criteria for different radio services using the same portion of the frequency spectrum.

In international problems of radio telecommunications, technical aspects tend to remain paramount. However, they are subtle, and unless one's own experts are involved, one is not apt to be in a position to take full advantage of technological opportunities nor in a position to be sure that a political or economic coup is not hidden in some other nation's technical plan.

IV. GENERAL WORLD ADMINISTRATIVE RADIO CONFERENCE 1979 (GWARC 1979)

The last General ITU Administrative Conference was held in 1959. Prior to that time, the practice had been to revise the ITU Radio Regulations as a whole whenever necessary. However, the rapid growth of telecommunications combined with the problems associated with revisions of the Regulations, have resulted in several specialized conferences since 1959. Using this as a basis, the 1973 Plenipotentiary Conference decided that a general conference should be held in 1979, and that this conference should be responsible for reviewing the Radio Regulations in its entirety. The final results of this 1979 meeting will have a major impact on telecommunications matters well into the next century. Many countries, international agencies, and organizations are already deeply involved in preparations for this conference. Thus, GWARC 1979 presents a challenge and an opportunity to the Navy Department, the Department of Defense, and the United States in general, which is not likely to be repeated in this century. The impact of the results of this conference will be felt in a much broader field than just the telecommunications arena itself. Indeed, every operation that uses communications as a means of carrying out its functions is liable to feel the loss of just such a communications capability with serious economic consequencies if we fail to do our homework well enough.

Although still four years away, the time is already running short for completing preparations for the GWARC within the United States.

Major international conferences of this type require a long lead time because the proposals must be backed up with sound technical information to have any hope of being accepted. Accordingly, time must be allowed for studies and research before proposals can be assembled. Further, similar studies and research are needed before the proposals of other countries can be analyzed.

The Conference in 1979 is not just an allocations conference. Of necessity, it will be empowered to review and revise the entire Radio Regulations, with a large stress on the Allocations Table. Understandably there is a large amount of inertia built into these Regulations and Tables. This is natural, when you consider that the portions of the table up to 40 GHZ have existed for some time now, and the portions up to 10 GHZ much longer than that. Nations have made tremendous economic investments in their portions of the spectrum that have been allocated to them. They cannot be expected to be too graceful about changing. However, evidence from the past few conferences has shown that they can be changed and new services accommodated.

V. UNITED STATES PREPARATION FOR THE GWARC 1979

It has been anticipated for a number of years that, because of the way the Radio Regulations have been evolving since 1959 in a sort of patchwork way, it would be necessary at some date in the future to convene a conference to take a close look at the Radio Regulations in their entirety. It was recognized in the United States a few years ago that such a conference was inevitable. At this time IRAC tasked one of its three permanent working groups, the Spectrum Planning Subcommittee, to begin some initial thinking as to what the United States' position might be for such a conference.

When the 1973 Plenipotentiary Conference in Malaga-Torremolinos, Spain, drafted Resolution No. 28 (see Enclosure 1), directing that the GWARC be held in 1979, the United States decided that some acceleration in its preparatory work was in order. Therefore, in January of 1974 IRAC established, as it does from time to time, an ad hoc committee to study the specific problems of preparing the United States' views, positions, and proposals for this conference.

A. AD HOC GROUP NO. 144 (IRAC)

Presently assembled in Washington, under the purview of IRAC, with the FCC participating, is a group of recognized experts in telecommunications that has been designated IRAC Ad Hoc Group No. 144. This group is chaired by Mr. Ed Probst, the Deputy Assistant Director

for Frequency Management (OTP). His group has been assigned the following tasks by IRAC:

1) To develop a suggested agenda for the 1979 GWARC;

2) To assemble United States' requirements for changes to, or expansion of, the Radio Regulations;

3) To prepare the United States' Preliminary Views, Draft Proposals, and Final Proposals, including sound technical support thereof;

4) To prepare recommended United States' Position Papers for guidance to the United States Delegation to the Conference; and

5) To plan for the eventual national implementation of the results of the Conference. [Ref. 20]

So far the Ad Hoc Group No. 144 is still in the preliminary stages of its work. The participants are representatives from the United States Government Departments and Agencies, including the FCC. At a later date "Industry" will be invited to participate under the auspices of the FCC. Eventually Ad Hoc 144 is expected to be a type of Steering Committee that will be sitting on top of a large number of subcommittees and working groups where the actual detailed work will be done. So far the only subcommittees and working groups established are:

I. Sub-Committee for Allocations, Notifications, Registration, and Definitions, with working groups

- To prepare for consideration by Ad Hoc 144 recommendations for the United States position for GWARC 1979 regarding the allocation, coordination, notification, registration, and definition provisions of the Radio Regulations. Their initial assignments are as follows:

  a) Article 5 of the Radio Regulations

  b) Article 9, 9A, 9B

  c) Article 1

  d) Appendices 1, 1A, 1B, 2

II. Sub-Committee for Operating Regulations

- To prepare recommendations regarding the operating procedures and provisions of the Radio Regulations. Their initial assignments are as follows:

  a) Article 10 of the Radio Regulations

  b) Articles 23-26

III. Sub-Committee for Technical Provisions

- To prepare recommendations regarding the technical provisions of the Radio Regulations. Their initial assignments are as follows:

  a) Article 2 of the Radio Regulations

  b) Article 7

  c) Article 12

  d) Appendices 3, 4, 5, 28, 29. [Ref. 17]

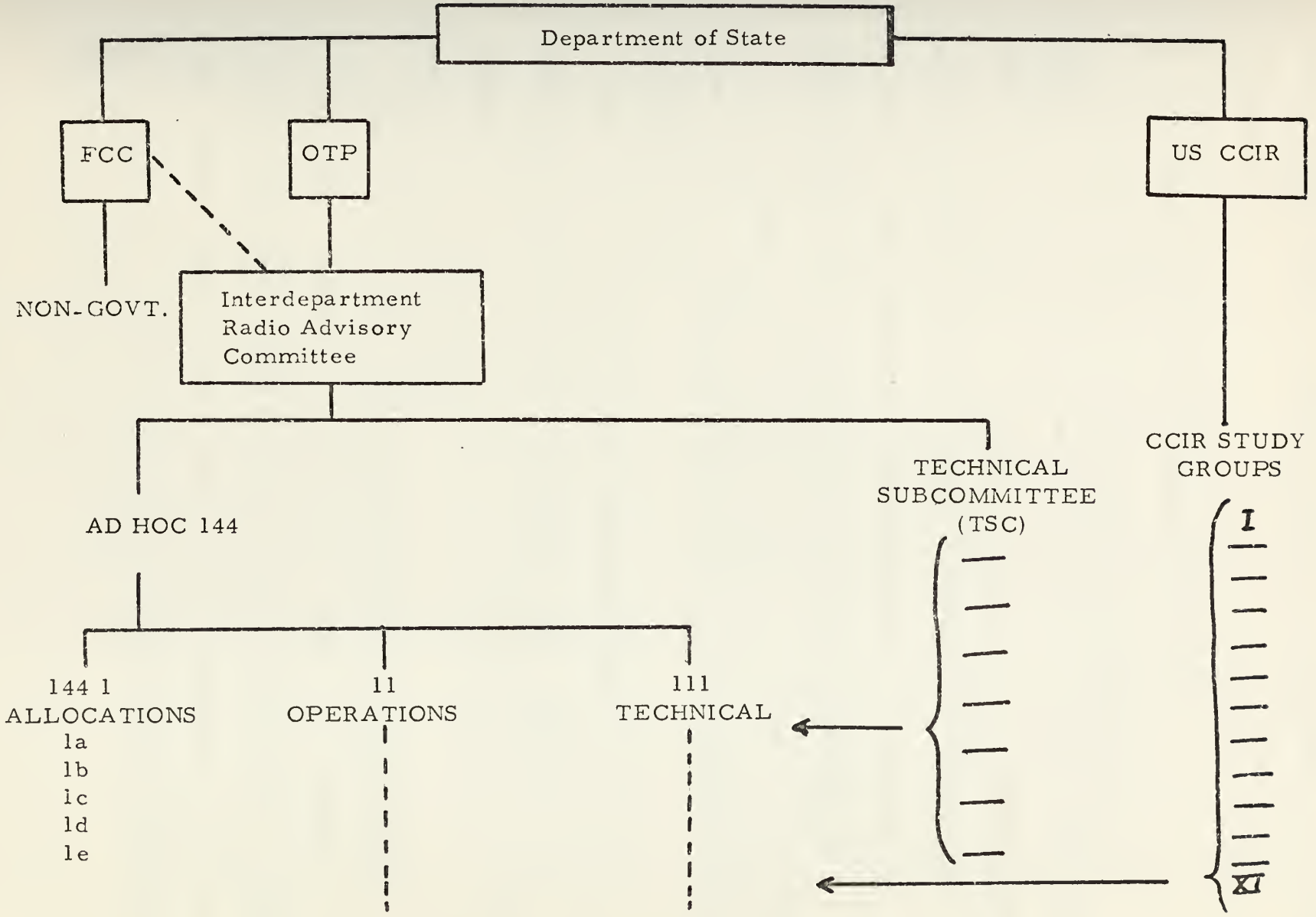
Since the Conference of 1979 is not just an allocations conference, but will have the power to review and revise the entire Allocations Table as necessary, the Ad Hoc Group's initial work has consisted of looking at these Tables from several viewpoints, namely:

1) New and developing science requirements
2) Continuing service requirements
3) Increased knowledge of propagation conditions
4) Anticipated frequency needs of the United States and the World. [Ref. 17]

Ad Hoc 144 will seek, at the earliest possible date, to begin to define the areas in which additional technical knowledge is required and will look to IRAC's technical sub-committees to fill in the gaps of that knowledge.

It will also work closely with the National CCIR Committee in seeking international support of the positions being developed. (See Figure 4) It is anticipated that there will probably be an additional series of Special Joint Meetings of the International CCIR just prior to the 1979 GWARC. At this point work must be done very closely with the CCIR, so that by conference time they will have our proposals in a form that will support the international requirements and our own.

The immediate problem facing Ad Hoc 144 is the proper formulation of the United States proposals to meet both the United States needs for the next twenty years and, at the same time, still be saleable to



WORKING RELATIONSHIPS - PREPARATIONS FOR GWARC

(From Ref. 13, enclosure 1) Figure 4

the rest of the World. A tentative schedule for preparations is presented in Enclosure 2.

B. INTERNATIONAL CONFERENCE STAFF (FCC)

In January 1975, as the initial step in its preparations for the GWARC in 1979, the FCC issued its first Notice of Inquiry, Docket No. 20271. (See Enclosure 3) This was an open invitation for all interested parties to submit their views concerning changes or revisions to the international Radio Regulations which they believe the Commission should consider when developing pertinent United States positions.

As in the past, the FCC will be closely coordinating its views with those of the OTP and the Department of State when developing national proposals for 1979.

The FCC's formal preparatory effort has not been under way as long as has that of the Federal Government users. However, FCC representatives have been attending all Ad Hoc 144 meetings and relevant sub-committee meetings.

The FCC has newly formed an International Conference staff to act rather like a counterpart to the Ad Hoc Group 144. In addition, a Steering Committee, headed by Mr. H. Fine, the Commission's Deputy Chief Engineer, and containing members from each Bureau and Office of the FCC, was recently created along with four functional committees. These four committees are concerned with:

1) Allocations and Regulations;

2) Notifications and the International Frequency List (IFL);

3) Technical Aspects; and

4) Operations. [Ref. 30]

To augment these efforts numerous service working groups were also established at the same time.

Presently work is being done organizing and evaluating interested party inputs as a result of the January Notice of Inquiry. The FCC must consider all needs and justifications, resolve conflicts, and then prepare a subsequent Notice of Inquiry containing these changes for further public comment. The output of the various service working groups will also be considered. Any interested United States party may participate in these groups with or without an invitation. The working groups' outputs will be forwarded to the appropriate functional committee(s). These committees will then sift through the working groups' outputs to provide ideas, data, and justifications to the Commission involved in incorporating changes into the next Notice of Inquiry. These functional committees also provide valuable training in a conference-like environment for many prospective members of the 1979 delegation. Unfortunately, the number of FCC delegates that have had actual conference experience, particularly experience at the last General WARC in 1959, has greatly decreased during the last few years due to retirement or death.

C. NATIONAL CCIR COMMITTEE

National CCIR activity to support the United States' interests in 1979 is already under way. Each United States Study Group is represented in the IRAC's Ad Hoc Group 144. This direct interface enables the identification of work that needs to be undertaken by the National CCIR.

Since the Fourteenth Plenary Assembly will be the last Plenary prior to the 1979 GWARC, it is anticipated that another Special Joint Meeting of CCIR Study Groups will be held, probably in late 1978 or early 1979, in order that the 1979 Conference can have the benefit of the CCIR's latest views. This was done in 1971 prior to the Space WARC. If such is the case, each member of the ITU will be able to submit contributions for consideration through this joint meeting.

Mr. Gordon L. Huffcutt, Chairman of the National CCIR Committee, indicated that although recent years have seen an undesirable emergence of political activity in ITU conferences, he feels, nevertheless, that the number of politicized decisions taken on technical/operational matters are relatively few. As he sees it, the degree of our success at the 1979 Conference will be to a large extent dependent on the completeness and quality of the technical base provided by the CCIR. The sounder the technical basis for a given proposal, the more difficult for political influences to sway the decisions. [Ref. 9]

D. UNITED STATES NAVY PARTICIPATION

Failure to successfully negotiate at the bargaining table in 1979 could be a mighty blow to the Navy's command and control mission which relies heavily on the radio frequency spectrum to bind its far-flung Naval Forces. The Navy's failure in the past to show respect for participation in world body rule-making and changes has caused many of the problems it is having with its communications today.

The last two Space Conferences did not receive sufficient United States Navy attention or representation. Since the 1971 Conference, we have begun to realize just how much we have lost, or did not get, by this omission. The civil side of the United States went en masse, and COMSAT and AT&T carried out large portions of the spectrum for exclusive fixed operations in the satellite band. Here lies the foundation for the military "misery" in the SHF and UHF satellite bands today. [Ref. 17]

The OTP has requested the Department of Defense's whole-hearted participation in helping to formulate and plan the policies for the United States positions in 1979. Accordingly, the Assistant Director of Telecommunications and Command and Control Systems (DTACCS) has tasked the Secretaries of the Military Departments to provide support. The Chief of Naval Operations (CNO) was designated the focal point for coordination within the United States Navy (USN). Late in 1974, CNO directed the Commander of the Naval Telecommunications Command (COMNAVTELCOM) to provide a line item in the budget to support the

GWARC preparation. The line item was submitted for POM 77 and subsequently deleted when the Director of Defense for Research and Evaluation (DDR&E) was tasked by DTACCS to coordinate GWARC preparation within DOD. Subsequent to this development, CNO asked for and was given assurance of support by COMNAVTELCOM for the GWARC preparation. The milestones associated with the Navy's preparatory efforts are listed in Enclosure 4.

In late March of 1975, NAVELEX-095 and PME-117 entered into negotiations with Tracor, Inc. to provide a USN GWARC Coordinator who would support CNO, OP-941F, in preparations for 1979. Captain Robert Greenwood, USN (Ret.) was selected to fill this critical position. Captain Greenwood has not only had considerable experience in the frequency management arena, but was also one of the United States Delegates to the 1971 Space WARC.

In addition, A USN GWARC Executive Council has been established to provide overall guidance and policy direction.

VI. POLITICAL ISSUES AND THIRD WORLD PRESSURES

A. THIRD WORLD INFLUENCE WITHIN THE UNITED NATIONS ARENA

A revolution began 28 years ago, one which Daniel P. Moynihan calls "The British Revolution". It began in 1947 with the granting of independence by socialist Britain to socialist India. In slow, then rapid, order the great empires of the World, with the single major exception of the Czarist Empire, broke up into independent states. The original role of 51 member states of the United Nations grew into 138. Although these new nations vary in terms of size, population, and resources, in one respect they hardly differ at all. They are all nearly ideologically uniform, having fashioned their political views from the British socialist model as it developed in the period roughly from 1899 to 1950. Dr. Moynihan justifies the term British by the fact that of the 87 nations to have joined the United Nations since its founding more than half, 47, had been part of the British Empire. Even apart from the Empire, British culture was undoubtedly the most influential in the first half of this century, and that culture was increasingly suffused with attitudes and ideas influenced by socialism. [Ref. 16]

Although everyone recognized that new states were being born out of former European, mostly British, colonies, they tended only at first to see them as candidates for inclusion into one or the other of the World

Powers. It was not generally perceived at first that they were already in possession of a preexisting, coherent, ideological base which was distinct. Thus, in the newly founded Republic of India the United States could see democracy, while the Soviets could see socialism.

Samuel H. Beer describes the doctrine of British socialism as a commitment to fellowship which fundamentally distinguishes ones approach. He goes on to add that for private ownership, one would substitute public ownership; for production for profit, production for use; for competition, cooperation. [Ref. 16]

In a socialist state a cultural and ethical revolution also takes place, and motives that were once aimed at individual benefit now aim at common benefits. Industry, which was once governed by individual decisions within the competitive system, now are subject to collective and democratic control. Redistribution, not production, remains central to the doctrine of British socialism. The term profit is considered synonymous with exploitation.

The socialist doctrine as it developed in Britain was anti-American, more so than it ever was anti-Soviet. The British and the Americans did not admire each other particularly during this era. More importantly, however, America was seen as essentially capitalistic, therefore profit-minded and imperialistic. Civil service workers from Britain took these viewpoints to the colonies; and what the civil service began, British education completed.

In a resolution adopted in 1960, the General Assembly proclaimed the need for a "speedy and unconditional end to colonialism in all of its forms and manifestations". The Third World argues that colonialism implies the direct or indirect control of one nation, or ethnic group, over another. Further, colonialism is equated with economic exploitation, foreign capital, large Western corporations, the capitalist system in general. To end colonialism, therefore, the exploited nations must not only acquire political independence, but also gain control over their economies, natural resources, and economic development policies.

In recent years, the Third World has been saying to the West, in effect, that it will use violence to attain independence and the end of colonialism. The colonists are then considered the aggressors because they are denying it independence, economic betterment, and equality. It wishes for the end of colonialism to be the central task of the United Nations.

Both the United States and the Soviet Union contributed heavily to the evolution of the multipolar and multibloc system. By seeking to strengthen its own side during the bipolar phase of the international system, each superpower helped the Third World become an autonomous force. Once born, this new force has rapidly changed the character of the system and is imposing new constraints, not anticipated, on the main powers. These new constraints raise the issue of intervention by the United Nations on behalf of human rights, democracy, equality, and

independence. They compel the major powers to ask themselves just how far such powers should be permitted to develop or if, in fact, they could even stop them from developing now. In fact, they are making these super powers very uneasy about the genie that they helped liberate from the bottle of colonialism and underdevelopment.

Almost the first international political act of the new states was to form the nonaligned bloc, distinguishing themselves, partially, from the two blocs into which the immediate postwar world was formed. In 1968 these countries met in Algiers and formed the Group of 77 as a formal economic bloc, bridging the gap from politics to economic matters. Their joint statement described the Group as "comprising the vast majority of the human race" - as it did indeed. [Ref. 16]

How has the United States been dealing with these new nations? If the Twenty-Ninth General Assembly is indicative, we have not even been coming off second best. Often we were reduced to a voting bloc of only two or more. At the close of this session, the permanent representative of India to the United Nations declared, "The activities of the Soviet Delegation at the session showed once again that the Soviet Union deeply understands and shares the aspirations of the Third World." [Ref. 16]

For a nation that practically started the United Nations, there has been a massive failure in our American diplomacy. It did not recognize the Third World as a distinct ideology, which is what the totalitarian

states did. Though by 1971 it was seen that the majority of the Third World states would not be going Communist, it was nevertheless possible for the Soviets to discourage any good relations it might have been considering establishing with the West. Meanwhile, we stood blindly by and even unthinkingly encouraged this.

The World Conference on Human Environment in 1972 and both the World Population Conference and the World Food Conference two years later turned into political arenas run by the Third World states in which the United States repeatedly came off very badly. [Ref. 16]

The United Nations General Assembly pursued the theme of expropriation, a cause highly favored by the socialistic Third World, throughout 1974. They commenced with a special session in the spring which dealt with the economic crisis of the underdeveloped nations, occasioned as much as anything by the alarming impact of oil price increases. This special session dealt with every conceivable abuse of economic power except that one. At the end of its regular autumn session, the General Assembly adopted a charter of Economic Rights and Duties of States which accords to each state the right to exercise full permanent sovereignty over its wealth and natural resources, to regulate and exercise authority over foreign investments, and to nationalize, expropriate, or transfer ownership of foreign property at will. The vote was 120 to 6, the United States, Belgium, Denmark, West Germany, Luxembourg, and the United Kingdom the dissenters. This was a radical change from

the original viewpoint of the United Nations. What once was a forum for international law and practice which acknowledged all manner of claims, but claims that moved in all directions, now recognizes claims that move in one direction only. [Ref. 16]

Upon opening the Fifty-Sixth Conference of the International Law Association meeting in New Delhi in 1974, Prime Minister Indira Gandhi stated, "Laws designed to protect the political or economic power of a few against the rights of the many, must ... yield place to laws which enlarge the area of equality, and ... law itself should be an ally and instrument of change."

She further added, "An obligation rests on the "haves" to generate confidence among the "havenots" ... a new approach to foreign investments is indicated, in which investments abroad are regarded more as service to the recipient community than as an enterprise where profits and their repatriation must be secured at all costs." [Ref. 16]

This is the language of British socialism applied to the international scene. American diplomacy has yet to recognize this fact, and therefore has yet to deal successfully with it.

Dr. Moynihan has noted that we are now witnessing the emergence of a world order dominated arithmetically by the countries of the Third World. There can be no pulling out now. World society and world organization have evolved to the point where crucial interests are disposed of in international forms to a degree without precedent.

For the moment, American security derives primarily from our own armaments and our strategic agreements with the Soviet Union and a few other powers. However, the international regime of arms control is already important and certain to become more so, especially now that India is the first of the Third World states to obtain nuclear power.

B. TRENDS SEEN DEVELOPING DURING RECENT WARC'S

In each of the last three ITU conferences, politicization of issues became a serious problem. Many countries, mainly from the Third World Bloc, have started using these conferences for political purposes.

The same Plenipotentiary Conference held in Spain in 1973 that decided to hold a GWARC in 1979 also stripped South Africa and Portugal of their right to participate in future ITU Conferences. At the same time, it cancelled the membership of the United States, British, French, Spanish, and Portuguese territories, thereby eliminating a little more of the clout that the Old World Blocs once wielded.

While in Spain it was the Saudi Arabians who led the Third World Bloc, it was the Algerians who led a Bloc of about forty lesser developed nations at the World Maritime Administrative Radio Conference (WARC-MM) in Geneva in 1974. They rallied their strength under the battle cry of "equal rights for all".

Commissioner Robert E. Lee, Head of the United States Delegation to the WARC-MM, summarized that WARC in one word ... politicization.

[Ref. 25] The Third World countries marshalled their forces to impose on the Conference an Allotment Table and Allotment Procedure based on nationalism rather than sound engineering principles.

There were 104 delegations and 104 votes at this conference. Most countries who participate cannot afford to send a full contingent of engineering and diplomatic representatives to these conferences, so they generally send a diplomatic delegation to vote. Thus, the major telecommunications powers, the United States, Russia, Western Europe, and Japan, dominated the technical agendas because of their high-caliber groups of engineers they sent as representatives.

During the conference, the Third World organized a caucus of about forty countries composed of the Arab States, Africa, and South America. There, with little or no technical support, they caucused for a new Allotment Table and a new allotment procedure for the coastal radiotelephone band.

Previously, the allotments were made to countries with a stated need with channel selections based on engineering, geographical, and operational criteria. Priority restraints were imposed with consideration for greater traffic loads and the seniority of the channel requirement. Thus, a limited number of allotments appeared on each channel with a recognized order of priority to be followed in case of harmful interference. Because not every country needs a coast radiotelephone capability, the system was not encumbered with meaningless allotments to countries with no requirements.

The new Third World system excludes no one. The alloted channels are stacked with present and potential users to allow every country a nominal share with no regard for engineering reality. [Ref. 25]

The Caucus also proposed a new procedure for fitting new countries into the Allotment Table. It provides for negotiation between the newcomer and the other allotments on the frequency. However, it also allows the newcomer in, under certain circumstances, even if the negotiations break down.

The USN presently has numerous international high frequency radiotelephone frequency allotments which they received from this new allotment plan created by the 1974 WARC. Essentially, this plan was developed not on technical sharing standards, but rather on political grounds. As a result, there are as many as fifteen countries on an allotment, all within propagation range, with the result that harmful interference is unavoidable.

The United States took a reservation to this instance of blatant politicization, as did several other nations. In the years since the creation of the ITU, the United States has never before had to take a reservation on an issue of this nature. Thus, for this country, the ITU Maritime Conference was less than an unqualified success.

During that same Maritime WARC, a proposal from Panama was upheld to change the country notation in the IFRB opposite the maritime mobile frequencies registered in the Panama Canal Zone, previously

on behalf of the United States, to indicate that they are now registered on behalf of Panama.

C. FORESEEN TROUBLE AREAS IN 1979 NEGOTIATIONS

Commissioner Lee has stated that the major telecommunications powers now dominate the ITU technical agendas, and the major result of this is that most countries have only an incomplete appreciation of the technical issues that face a conference such as the Maritime Conference .... therefore, the non-technical delegations can now dictate the outcome of a conference. [Ref. 25]

A question that will probably be decided in 1979 is whether the fixed bands below 30 MHZ really need as much spectrum as they did in the past. Some nations want to expand their use of the fixed band, and some say they use it less.

Considerable pressure exists for increased allocations to the maritime mobile service and the international broadcasting service particularly. While the more advanced nations unquestionably rely less on high frequency for long range fixed service with the advent of cables, satellites, and broadband systems higher in the spectrum, the less developed nations may well want to retain the fixed service allocations because of the cost factors involved.

Until the 1971 Conference, which allocated spectrum for space telecommunications and radio astronomy, there were no allocations

above 40 GHZ. Today, in the International Table, there are allocations up to 275 GHZ for space services and radio astronomy only, with several unallocated gaps in between. The GWARC in 1979 may or may not adjust these allocations made in 1971, but it will certainly fill in the table with allocations to the terrestrial services, in some cases on a shared basis with the existing space service allocations, and will probably extend the table to at least 300 GHZ if not beyond. The United States' National Table is already filled in up to 300 GHZ, however. This tasks Ad Hoc Group 144 with another job of reevaluating and refining these requirements into a form that will be acceptable to the rest of ITU.

The International Frequency List (IFL) presently contains what many nations regard as evidence of past abuses by the major nations, who may hold many registrations not actually being used and are thereby preventing others from obtaining needed allocations. Ad Hoc 144 is presently examining all present United States entries in the IFL to see if it accurately represents current operations. If any errors or omissions are found, they are being corrected. The intent is to insure that the United States Delegation in 1979 can use its listings in the IFL as accurate evidence of its uses of the spectrum. [Ref. 13]

Mr. F. L. Frisbie, CNO, 941F, feels that there are some significant possibilities for 1979 which are logical extensions of what has happened in the ITU in the recent past. He sees some examples of these to be:

1) Allotment of the geostationary orbit, so that every country could be assured that an advantageous position on this orbit would be available if and when that country was able to launch a satellite. (Translation: Keep the Big Powers from taking everything.)

2) Removal of the seniority date system for all registrations. (Translation: Strip the rights from the old users of radio.)

3) Reallocation of spectrum to services which are more suitable to the needs of emerging nations, perhaps reductions in the spectrum allocations for aeronautical mobile in favor of fixed or broadcasting. [Ref. 17]

D. ALTERNATIVE TO THE ITU BARGAINING TABLE

Commissioner Robert E. Lee believes that the United States should cultivate bilateral and multilateral telecommunications arrangements as an alternative to coordination by the ITU. He suggests that an excellent forum for negotiation already exists in the Combined European Post and Telecommunications (C.E.P.T.) organization, the body that coordinates the civil side of European telecommunications. We should encourage efforts to widen C.E.P.T. to include telecommunications users from outside Western Europe, notably the United States and Japan. [Ref. 25] It was also suggested by Commissioner Lee that the United States should make telecommunications part of detente with the Soviet

Union. In conjunction with trade negotiations, we should be making arrangements with them on issues of mutual interest in telecommunications. [Ref. 25]

Other nations interested in the telecommunications field could be coordinated on an individual basis or through an expanded organization based on the European C.E.P.T. This organization could serve as a clearing house for telecommunications agreements among the principle telecommunications users.

VII. RECOMMENDED PREPARATIONS AND APPROACHES FOR 1979 UNITED STATES DELEGATION

A. PAST METHOD OF UNITED STATES' PROPOSAL PRESENTATION

In the past, an Ad Hoc Group of the IRAC has been formed, tasked with preparing the United States' positions. They would survey the anticipated needs of the Federal Agencies, and they would look to the FCC to survey the anticipated needs of Industry. They would put these together, resolve the apparent conflicts between them, and come up with proposals. These, then, would be labelled "Preliminary Views" of the United States. At this point in time the FCC would put out a "Notice of Inquiry" to Industry. In this they would publish these preliminary views and ask for comments. In the past, the United States has also exposed these views to other nations for their comments. Upon receipt of comments from industry and other nations, the Ad Hoc Committee would make the recommended modifications and produce a set of "Draft Proposals".

At this point they would start the whole process over again. The Draft Proposals would be published in a Notice of Inquiry by the FCC and be provided to other governments of the world for comment and review again.

At last, a set of United States' proposals would be prepared in final form and sent to the Secretary General of the ITU. These past

proposals, based on sound technical grounds in which there was generally recognized technical rationale and support, stood a good chance of being adopted.

Even though there may have been political manifestations in the past against the major countries, there has been so far no such reaction to recommendations from the CCIR. Thus far, at least, recommendations of the CCIR seem to enjoy complete respect. However, it appears that we will be facing a whole new and somewhat hostile situation in 1979, in which the strategies we use should be a little different than the ones we have used in the past.

B. PROBABLE 1979 METHOD OF UNITED STATES' PROPOSAL PRESENTATION

There has been observed a tendency during the last couple of conferences for other nations to sit back and wait to see what the United States is going to propose either in their preliminary views or in their draft proposals, while they themselves make no comment. Later on the conference floor, these same nations will reveal the areas in which they oppose our views. Perhaps it might be a more successful strategy for the United States to listen a little more closely to the views of the other nations, and to try to find out what the world trends really are. According to Mr. Frisbie, CNO (941F), the only thing that we have gained by our past strategy were some well informed adversaries. [Ref. 17]

Right now in Ad Hoc 144, they are leaning toward this approach a bit more while defining their tasks. They have defined them as follows:

1) To use whatever sources are available; contacts on the part of individuals with friends and counterparts in other nations, contacts in other technical, bilateral, and multilateral coordinating committees and groups that exist, contacts from whatever sources can be found, to try to find out what the trends are in the rest of the World.

2) To try to evaluate the spectrum needs on the behalf of the United States. [Ref. 13]

This time a more concerted effort is being made to take into account the indicated world trends while formulating the United States' needs to the maximum extent practicable. Whatever modifications we make, we have to see that we wind up with a body of rules and regulations that the United States telecommunications industry and government can live with during the time frame from whenever these final acts go into effect, which will probably be around 1980, until, at least, the year 2000, if not beyond.

Serious consideration is being given to not publishing the United States' Preliminary Views, as has usually been done for past conferences, for wide distribution and comment. Instead, there exist plans to develop them through several draft stages, refining them based on results of general discussions and the continuing development of

both government and non-government indicated needs. These plans are tentatively scheduled to be in a fairly complete First Draft stage by mid-1976, a Second Draft by mid-1977, and a Final Position by mid-1978. [Ref. 9]

Though the former Preliminary Views procedure of distribution to other countries for their comments will probably not be used, Mr. Probst indicates that the United States would engage in bilateral and multilateral discussions with as many other nations as possible. This would be done to acquire a feel for their views and to give them the benefit of ours. [Ref. 18]

C. RECOMMENDED APPROACH TO UNITED STATES NEGOTIATIONS IN 1979

The United States does recognize the need for international spectrum regulations in order to avoid utter chaos of telecommunications systems and does recognize its obligation to operate within these regulations whenever possible. Therefore, it is not felt that the United States will be withdrawing its support from the ITU in the foreseeable future despite the trend it has taken of politicizing strictly technical issues during recent Administrative Conferences. However, over-regulation limits flexibility and could operate in detriment to the meeting of our future, and possibly unanticipated, needs. Foremost, the primary concern of the United States is obviously, as it must be, the meeting of United States needs.

If the 1979 Conference should be in a mood for sweeping changes in the Allocation Tables and Radio Regulations, as is likely, the United States could stand to lose more than it could gain. The last couple of conferences have shown that proposals of major nations such as the United States tend to meet with immediate resistance from the Third World Bloc. Therefore, unless a change in the present allotments is absolutely necessary for our future needs to be met, it is felt that it would be wiser not to bring up the subject. A proposal for change might well, after the conference had finished with it, result in a more untenable provision than before.

The United States must also ascertain, and evaluate, the proposals that the other nations are likely to make and should resist only those which would obstruct our own flexibility to any significant degree. To accomplish this, we must be in constant communications with the rest of the world between now and conference time. A bit of diplomacy and accommodation on our part now toward another nation's vital requirements for changes to the tables might encourage a similar attitude on their part toward our own proposals. However, we must not be so overly pliable at the bargaining table as we have been in the past, if we feel that it is in our best interests to resist some proposal. More than ever now, we need to send some shrewd "horse traders" to this Conference in 1979.

Most important, however, our 1979 Delegation should be armed with sound and fully developed technical arguments to defend their required provisions for the Radio Regulations and Table. This should include both defense for our existing provisions that we wish to preserve, as well as any new provisions that we want adopted. Here, groundwork laid by our United States CCIR Study Groups and National Committee could prove invaluable, if they can get our technical proposals adopted as recommendations by the international CCIR Plenary Assembly. Above all, we must maintain and promote the conviction that the ITU must remain an essentially technical forum within which politics can have no place. CCIR recommendations which are technically sound, understandable, and acceptable to the majority of nations, can hopefully act to discourage opposition of a purely political nature.

Wherever it is foreseen that the United States or another nation is going to request a change in the regulations, the 1979 Delegation should be supplied in advance with a "fallback position" beyond which they would not be prepared to go. If circumstances force this, then the Delegation would be obliged to seek further guidance as to whether it must take a reservation on some provision of the Final Acts as it did in the 1974 Maritime WARC. This is a very good possibility in 1979, but, above all else, we must not be afraid to exercise this option to protect our interests.

It has been suggested that frequency managers from the Third World Bloc should be invited to attend Allied frequency management schools and technical Symposia so that sound technical planning can be injected where it will do the most good.

Mr. Frisbie, CNO (941F), suggests that another possibility to be considered in preparation for the 1979 Conference is whether or not the United States should submit any views at all. It has become clear that the United States is a favorite target for the Third World Bloc. On a number of occasions in 1974 it was obvious that it was our expression of interest in, or support for, a proposal that triggered off resistance by the Third World. In the judgment of some delegation members, this was partially responsible for the failure of the United States' Compromise Document on Appendix 25 to the Radio Regulations, which was clearly a technically superior approach than was adopted. Recognizing that these reactions do occur, the United States might well consider cultivating a surrogate nation who would surface and submit proposals which the United States could then support, if necessary, on the floor of the Conference or in committee. [Ref. 17]

Mr. Frisbie goes on to further substantiate his recommendation by pointing out the added factor of the presence of the Peoples Republic of China at the 1974 Conference. Although their delegation said little and seemed to be "feeling things out" in 1974, Mr. Frisbie is certain that China's role in 1979 will be significant, and that in all likelihood

it will emerge as the leader of the Third World Bloc. [Ref. 17] Therefore, a little unorthodoxy on our part may well be called for to get our proposals across.

Another important lesson that we were taught at the 1974 Conference had to do with the way we allowed it to organize in a very haphazard fashion, giving no thought to the consequences. The Super Powers and the neutral countries did little to take control of the Conference - not so the Third World.

The biases of the Chairmen at all levels of the organization can have a significant influence on the proposals passed. In 1979, we would do well to be more careful in the selection of these individuals.

As to our own delegation in 1979, it cannot be too big. We should be able to have a minimum of one qualified person at every meeting of every sub-working group should they all be meeting at the same time. During the WARC-MM, we were sometimes hard pressed to do this and all too often had to "make do" with a substitute when the principal representative was off attending to one of his other responsibilities. [Ref. 17]

As Mr. Frisbie points out from his long experience at these conferences, it is only by having enough people to cover all meetings simultaneously that our proposals can be successfully defended and adopted. It is much easier to "sell" them at the lowest levels of the Conference structure. By doing so, they acquire a measure of support

and anonymity which could prove very helpful to us as the propositions move up the ladder toward adoption. [Ref. 17]

VIII. CONCLUSIONS

A. IMPLICATIONS OF GWARC 1979 OUTCOME

The electromagnetic spectrum is a vital but limited natural resource whose use is only as good as the technological and managerial techniques applied to it by its users.

The structure that governs spectrum usage on an international level is the International Telecommunication Union (ITU). Its job is to ensure efficient and fair usage of this valuable resource. To this end, it regularly holds World Administrative Conferences to review and revise, as needed, the Radio Regulations and Allocations Tables governing spectrum usage throughout the World. The next such General Conference to do this will be held in May of 1979 in Geneva.

Within a ten-week period, 149 members of the ITU propose to effect a general revision of the international Radio Regulations, including that portion of the Regulations which prescribes the world-wide allocation of the radio frequency spectrum. Deliberations at this Conference will be taking into consideration both the provisions which regulate the international use of emitting devices, and the allocation of the spectrum which supports these emissions. The scope of this conference will be very broad with possible far-reaching effects on the economies of many attending nations. Participation in this Conference will present one of

the greatest challenges to the United States in the history of its relationship with the ITU.

Although the ITU itself has no martial force to back up its Final Acts, these acts constitute a treaty obligation upon all countries concerned. At the conclusion of each ITU Conference, the Final Acts of that Conference are submitted to the Senate for advice and consent to ratification before being passed to the President for his signature.

Although this might not be an ideal way of wresting harmony out of a spectrum chaos, it is presently "the only game in town". Bilateral and multilateral agreements, such as the European C.E.P.T., can be only a temporary or partial solution. As the satellite telecommunications business keeps expanding by quantum leaps and bounds, the World is shrinking at an equal rate. Telecommunications must now be a worldwide concern if we are to make maximum usage of this resource without contamination or interference.

Thus the United States does have a large stake in seeing that the Final Acts passed in 1979 are ones that we can live by and that will support our telecommunications needs for the rest of this century.

B. PREPARATIONS FOR GWARC 1979

Preparations for the 1979 GWARC are well underway in the United States. In January of 1974, IRAC tasked an Ad Hoc Committee, Ad Hoc Group No. 144, to initiate the preparatory work for this Conference. Ad Hoc 144 was recently broken down into three sub-committees to

deal with specific aspects of the spectrum. It is expected that even further breakdown of committee work will be necessary in the future, as special attention to specific spectrum needs arise. As preparations accelerate and the time draws near, Ad Hoc 144 is expected to act as a sort of steering committee for all of these sub-working groups, reviewing and compiling their recommendations for IRAC.

The FCC has also established a committee structure, much like that of Ad Hoc 144, to deal with the requirements and plans of the private sector. When appropriate, government representatives attend FCC meetings, while delegated FCC members attend all Ad Hoc 144 meetings and any relevant sub-committee meetings.

Probably in 1977 a provisional United States Delegation will be formed, comprised of both government and public representatives. This group will then have the job of formulating the initial United States conference position based on the preparatory work of both Ad Hoc 144 and the FCC.

All preparatory work of this type is, at the same time, being done in close coordination with the technical studies of the United States CCIR Study Groups. Indeed, the CCIR has representatives attending all Ad Hoc 144 meetings. Several IRAC members are also members of CCIR Study Groups. The same can be said for the private sector. This close coordination from start to finish of United States position preparations lend greater strength to our technical justifications for United States proposals on the Conference floor.

C. RECOMMENDATIONS FOR GWARC 1979

It is important to recognize that the ITU has not died, but its role has changed for the foreseeable future. No longer can we assume that the ITU will be a neutral expert agency. Three major trends wrought our setback at Geneva; the population explosion among sovereign states, the uneven distribution of technology, and the new militancy of the Third World. These trends will prevent the ITU from assuming its former role as a non-political, expert body.

Due to the complex nature of this problem, it is recommended that the United States prepare a variety of approaches to other nations and organizations of the World who will participate in the 1979 Conference. Since it has become evident that political rather than technical considerations may become paramount, it is suggested that we learn to play the game by these new rules. We cannot, however, adopt one single approach to other contenders for frequency usage when they themselves vary radically in their technical capabilities, their economic and spectrum requirements, and even their political biases. Accordingly, we must do a lot of homework prior to conference time as to their national and regional requirements and proposals for frequency usage.

At the same time, however, it is recommended that we ourselves play a waiting game with our own position papers for 1979. No longer should our adversaries have the advantage of prior knowledge of our proposals before they are presented on the Conference floor. Instead,

the emphasis of our preparatory work should be done through the United States CCIR Committee by its laying the groundwork for acceptance of our proposals on the international level. This is presently where our greatest hope lies.

In addition to CCIR involvement, preparations of position papers by the IRAC and FCC, and constant interaction with other governments, the most important element of the 1979 Conference is the composition of the United States Delegation itself. The art of successful international negotiations cannot be learned at any frequency management school. It comes only through experience in the political arena. After World War II, a large number of successful United States negotiators grew up with the telecommunications industry. Unfortunately, most have now vanished from the scene. The selection of replacements and the retention of the few experienced negotiators remaining could prove critical when you consider that there are literally billions of dollars being spent on telecommunications systems that a few years from now may not be permitted to be used.

All in all, the key to United States preparation is participation by the entire user and frequency management community. We must assess the future systems and their requirements while maintaining our existing ones. We must meet the challenge of the Third World Bloc and beat it at its own game in the sense that the ITU must be preserved as a technical forum, not a political tool. The utility of this valuable resource,

the frequency spectrum, must not be allowed to deteriorate as a result of political manipulations, since all users, Third World and Super Powers alike, would suffer the consequences.

APPENDIX A

SPECTRUM USAGE

BAND	FREQUENCY	FUNCTION
VLF	10-30 KHZ	Long Range Communications
LF	30-300 KHZ	Long Range Communications, Maritime Navigation Aids
MF	300-3000 KHZ	Broadcast, Maritime Communications Maritime Navigation Aids, Coastal Telephone, Medium and Long Range Communications
HF	3-30 MHZ	Medium and Long Range Communications
VHF	3-300 MHZ	Short Range Communications, Television, Radar, Aeronautical Navigation Aids
UHF	300-3000 MHZ	Short Range Communications, Television, Radar, Relay Systems
SHF	3-30 GHZ	Radar, Navigation Aids, Relay Systems
EHF	30-40 GHZ	Radar, Navigation Aids, Relay Systems

[Excerpt from Ref. 24]

APPENDIX B

LIST OF ADMINISTRATIVE CONFERENCES SINCE 1959

1959-- An Ordinary Administrative Radio Conference expanded the Table of Frequency Allocations to 40 GHZ, made extensive revisions to accommodate radar devices, expanded the application of radionavigation aids, and made token allocations for the new radio astronomy and space services.

1963-- The Space Extraordinary Administrative Radio Conference made extensive allocation provisions for the accommodation of space technology, including 2800 MHZ of spectrum space for communication satellites, and additional provision for radio astronomy observations.

1964-- and 1966 An Extraordinary Administrative Radio Conference reviewed and revised Articles 7, 9, and 20 of the Radio Regulations, and Appendices 1 and 26, and prepared new Appendix 27 to effect a new allotment plan for the Aeronautical Mobile (R) Service.

1967-- A World Administrative Radio Conference reviewed and revised the Radio Regulations relating to the Maritime Service (about two-thirds of the Radio Regulations were involved).

1971-- A World Administrative Radio Conference undertook a major review of Radio Regulations, particularly as regards the Table of Frequency Allocations, to accommodate and provide for the application of space technology into the 1980's.

1974-- A World Administrative Radio Conference reviewed and revised the Radio Regulations pertaining to the Maritime Mobile Service. Results of this conference are covered in Section VI. B of this thesis.

(The above list is an excerpt from Ref. 27, p. C-19-20. One, at least, and possibly as many as three such specialized conferences are set to convene prior to the 1979 GWARC [Ref. 7]).

ENCLOSURE 1

RESOLUTION 28

WORLD ADMINISTRATIVE RADIO CONFERENCE FOR THE GENERAL REVISION OF THE RADIO REGULATIONS

The Plenipotentiary Conference of the International Telecommunication Union (Malaga-Torremolinos, 1973),

Considering

a) That, since 1959, various World Administrative Radio Conferences have amended the Radio Regulations and Additional Radio Regulations on specific points without having been able to harmonize the decisions taken because of the limited nature of their agenda;

b) That, as a result of technical advances, some of the provisions in these Regulations should be reconsidered, particularly with regard to certain services which are developing rapidly:

c) That, for these reasons, a general revision of the Radio Regulations and of the Additional Radio Regulations should be undertaken;

Resolves

That a World Administrative Radio Conference to revise, as necessary, the Radio Regulations and the Additional Radio Regulations shall be convened in 1979;

Instructs the Administrative Council

To make preparations for convening that Conference.

ENCLOSURE 2

OUTLINE ON WORK IN
CONNECTION WITH THE GWARC 1979

TIME FRAME	TASKS
1974-1975	1) Assemble spectrum requirements necessary to support U. S. telecommunications needs through 1990 and beyond.
	2) Define and attempt to resolve conflicts in stated requirements.
	3) Define technical support and studies required to include inputs into international technical forums (CCIR) prior to 1979 GWARC.
	4) Determine deficiencies in the present Radio Regulations.
	5) Begin coordination with other nations.
	6) Prepare recommendations for the U.S. representatives to the Conference.
1975-1976	7) Develop draft proposals for changes to the Allocations Table and solicit industry comments.

8) Develop draft changes to the balance the Radio Regulations and solicit industry comments.

9) Complete necessary technical studies and provide inputs and participation in international technical forums (CCIR) considerations.

10) Resolve conflicts resulting from agency and industry comments.

11) Maintain coordination with other nations.

1977

12) Complete and promulgate U.S. preliminary views.

13) Coordinate U.S. Preliminary Views with the public.

14) Continue to refine U.S. requirements.

15) Complete and promulgate U.S. Draft Proposals.

16) Coordinate U.S. Draft Proposals with the public.

1978

17) Continue to refine U.S. requirements.

18) Complete U.S. proposals and forward to the ITU.

	19) Coordinate U.S. proposals with other nations.
	20) Receive proposals of the other nations.
1979	21) Prepare position papers for U.S. delegation to the Conference.
1979-1980	22) Implement the results of the Conference.

(Enclosure to Ref. 13)

ENCLOSURE 3

PUBLIC NOTICE
FEDERAL COMMUNICATIONS COMMISSSION, FCC 75-116,
JANUARY 31, 1975-G

PUBLIC PARTICIPATION IN PREPARATION FOR 1979
WORLD ADMINISTRATIVE RADIO CONFERENCE

The Commission on January 10, 1975, released a Notice of Inquiry looking toward possible revisions to the international Radio Regulations to be considered in 1979 by the World Administrative Radio Conference. (Docket 20271).

As has been the case in preparation for previous international conferences of a general or specialized nature, the Commission wishes to obtain the maximum public input in developing the United States positions for the 1979 WARC. In view of the significance of the 1979 WARC to this country, and particularly since the Conference results are expected to develop the international frequency allocation framework for the remainder of this century, it is important that such preparation be more intensive than that obtained solely through normal administrative procedure.

An internal organization is being established to coordinate the Commission's efforts in planning for the 1979 Conference. It is desired that an opportunity for public participation in such effort be extended at the working group levels. Accordingly, notice is hereby given of a

meeting scheduled for 9:30 AM on February 21, 1975, in the Commission's meeting room, Room 856, 1919 M Street, N.W., which will be open to the public. The meeting will be held for the purpose of presenting a briefing on the Commission organization and for offering an opportunity for public participation as observers in the preparatory effort.

Action by the Commission January 29, 1975. Commissioners Wiley (Chairman), Lee, Reid, Hooks, Quello, Washburn, and Robinson.

(Enclosure to Ref. 30)

ENCLOSURE 4

GWARC 1979

USN MAJOR MILESTONES	COMPLETE
STAFFING MEMBERS FOR USN PARTICIPATION	MARCH 1975
INITIAL TECHNICAL STUDIES, AREAS IDENTIFIED	JANUARY 1976
ESTABLISH USN OBJECTIVES	JUNE 1976
PUBLISH U.S. PRELIMINARY VIEWS ON SERVICES, ALLOCATIONS, SPACE, TECHNICAL STUDY	JANUARY 1977
REFINE TECH STUDIES	AUGUST 1977
PROMULGATE U.S. DRAFT PROPOSALS	OCTOBER 1977
COMPLETE U.S. PROPOSAL	JULY 1978
PREPARE U.S. DELEGATION	JANUARY 1979
PARTICIPATE WARC	MAY 1979
IMPLEMENT WARC RESULT (USN)	DECEMBER 1979

(Enclosure from Ref. 28)

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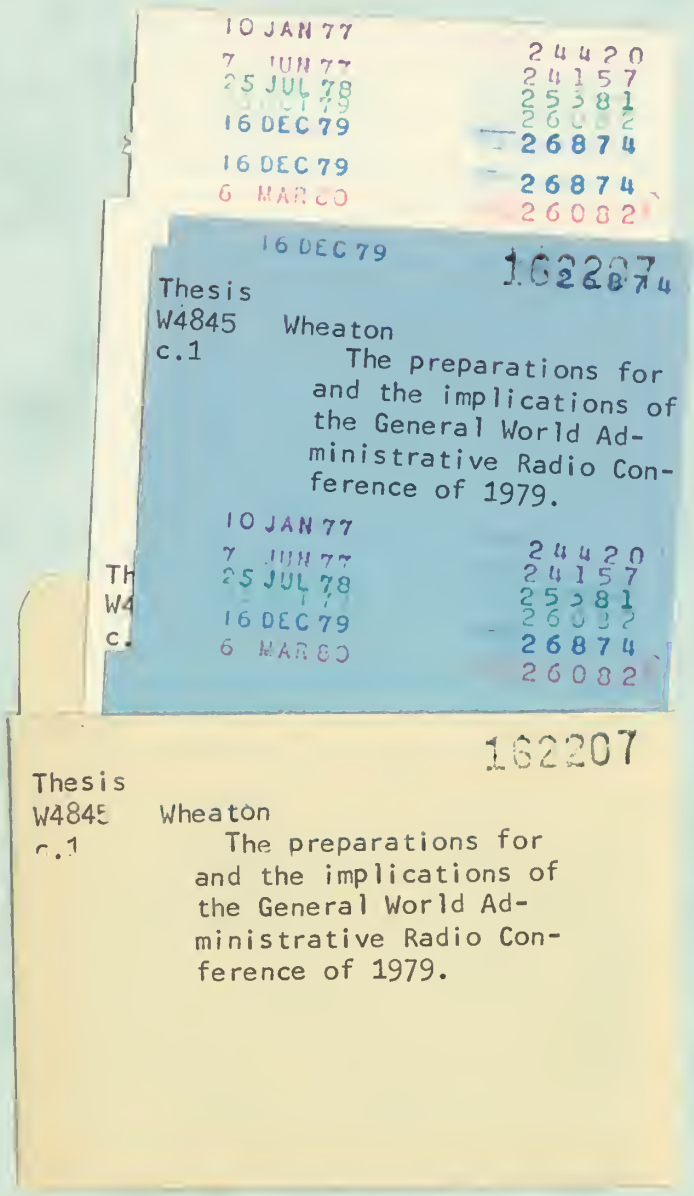

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